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ABSTRACT

Cognitive mapping is a way to determine cognitive style. Based on the "Hill Educational Sciences Model," cognitive mapping is generally applicable in education at any level and in any area, but it has particular applications in communications courses. The simplest method of applying the cognitive style mapping procedure is to have students respond to a variety of statements as pertaining to them "usually," "sometimes," or "seldom." Cognitive style maps are prepared from these responses for each student in the class and for the class as a whole. Basically, the maps place the students (and the instructor) on different scales that indicate preferred ways of learning and interacting with others. The maps show teachers quickly and with reasonable accuracy what their audience is like, thus streamlining the process of selecting the teaching methods most likely to work with the particular audience. (A sample of the type of cognitive style map used at East Texas State University is attached.) (RL)

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Cognitive Mapping and Assessing the Communication Student

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. . The last twenty years have shown a remarkable growth in the field of human communication. Versions of the basic speech communication course are offered at all colleges and universities. While communication scholars maintain a propensity towards the study of communication as an intellectual pursuit, it would be hard to underestimate the actual pragmatic value of general communication skills to our students.

It is apparent that communication scholars and teachers are legitimizing the field of communication,[1] developing it into a highly technical field with its own information base and technical vocabulary. While it is important that these efforts continue to build the stature of the field of communication in the academic community, it is equally important to do whatever we can to teach and guide students in the most effective methods to achieve successful communication skills.

The need for communication skills in the trades and professions is apparent. Communication scholars have few of the problems faced in other fields in which potential for application is less obvious, in convincing students of the need for what they have to offer. Communication skills can be used in gaining and holding employment, in functioning effectively in any organization, and in general in being effective in any position where it is important to ascertain what other people are really trying to say and in making oneself clear.

However, our students seem to be trying to communicate another important message to us, that there is a need for effective communication in their everyday lives as well as in their professional lives. They live in a world dominated by a technology so complex that grasping even bits of it thoroughly may require a lifetime of effort. The level of public communication has never been higher, thanks to the mass media, but the messages being communicated are ever more obscure, ever more complex.

Business organizations routinely hire communication experts to build the level and quality of communication in their firms. Failure in marriage and in myriad other human enterprises is commonly ascribed to "breakdowns in communication." Faith in the efficacy of communication as a solution to human problems is becoming commonplace, and in response university curricula in communication are expanding, as departments strive to offer their own brands of communication courses relating to specific fields and professions.

However, it is unwise to allow specific interest groups to conduct classes which communication professionals would be better able to conduct.

This is not to underplay the importance of communication in the professions, but rather to remind ourselves that the communication expert can provide more useful, more generalized communication experiences for students, experiences which will be useful to them in every area of their lives rather than just in specific situations like giving and conducting interviews or building interdepartmental communication. For example, a businessesperson who has developed his/her expertise in interviewing employees may not have learned to develop empathetic skills sorely needed in relations with his/her spouse and children. This may have come about because this person was taught to see interviewing skills as a purely professional tool rather than to generalize the skills to all types of interpersonal communication situations.

In designing the communication classroom setting, most communication educators in the past have employed "traditional" modes of teaching and learning to educate students in the skills of communicating. Other modes are emerging, however, under the rubric of "non-traditional" methods. Basically, non-traditional education refers to additional types of learning other than the basic teacher presentation and discussion of information in the classroom.

It is unlikely that anyone working in higher education today has not heard or read a great deal about non-traditional teaching methodologies. Some advocate the "discovery" method, where heavy use is made of classroom activities by the students rather than the instructor, such as simulations, role-playing, and games.[2] Others advocate the use of highly-structured statements of goals and objectives presented to students in advance of

instruction. Video cameras are used to record communication interactions for later review by individual students or by the entire class. Students are sent out into the "real world" on business interviews rather than practicing these interactions exclusively in the classroom setting. And the list goes on...

However, in spite of the plethora of pedagogical techniques available to the communication educator, there are pragmatic problems. For example, is there a "best" teaching methodology for the type of students we have to work with, or some methodologies which will work better than others? Compounding these issues is the change in student population which communication departments have already begun to face. A decline in the traditional 18 to 21-year-old student population appears inevitable, accompanied by an overall decline in student enrollment in higher education.[3] Naturally, this projection contributes to the future success of higher education and especially to core courses like communication. This projection is a vital issue and must be addressed immediately to have any feasible impact on future student populations. Communication educators and administrators must make necessary administrative and pedagogical alterations to meet these future needs.

Our students in the future will have to come from somewhere. We can anticipate an influx of persons who have worked in a profession for many years and feel a need to come back to school; of housewives and mothers who are entering the trades and professions later in life; of students who have tried a variety of experiences and wish to return to

school for self-enrichment or for a career goal, and of students pursuing vocational education degrees.[4] This population suggests that future students will probably be older and more mature (as opposed to the traditional 18-21 year old dependent student), and more likely demanding than students at present about receiving learning experiences which are relevant and generalizable.

Generally, the two basic problems departments of communication will be facing, and in many cases are facing now, are the changing student population and the difficulty of implementing "nontraditional" approaches. The influx of this changing student population demands a wider range of teaching methodologies. Students will demand more relevant and self-actualizing educational techniques.

In an attempt to address this issue, a variety of nontraditional methodologies have been attempted and assessed. No particular method has emerged as being obviously superior to any other; in fact, one generalization which has emerged is that <u>any</u> approach done brilliantly will succeed regardless of its appropriateness to the instructional situation. There are traditional faculty members who would be well advised to change nothing about the way they are conducting their classes. On the other hand, there are those of us who can see room for improvement and are searching for answers.

Experience with nontraditional methodologies has been met with confusion and mixed emotions. Mixed in with high-quality efforts being made today in nontraditional education is a good deal of muddling about

with variety for its own sake. Some college administrators decree that "objectives" will be written and distributed by all faculty, and pro-forma compliance quickly develops. The faculty who professionally survive these experiences generally have few good words to say for systematically developing instruction via the use of stated objectives. For others, who have had the opportunity and inclination to develop applications of systematically-developed instruction for their own motives and at their own pace, enthusiasm for this approach borders on the religious. Non-participants in the fracas look on from departmental sidelines, some waiting for the fuss to blow over, others quietly looking around for a more traditional institution.

The "fuss," however, has not blown over, and seems to be here to stay. Some basic ideas have emerged which will invariably improve the quality of instruction, for example:

(1) It is a good idea to find out what your audience is like.

(2) It is a good idea to provide and use methodologies of teaching/learning which are likely to work with your particular audience.

(3) It is a good idea to provide tests which actually measure what you are teaching.

There is nothing really revolutionary here, but in practice implementing these ideas can be a complex task. The professional literature is replete with techniques and methods for teaching and learning. Offering evan a few of them as options can be a job of mind-boggling proportions, and even when the attempt is made, the effects are unpredictable to the

extent that the audience has not been adequately assessed in terms of learning and teaching preference.

Ascertaining the characteristics of your audience; i.e., audience assessment, is a necessary prelude to selecting and utilizing methodologies that are likely to work with your students. A variety of ways exist for assessing a student audience. The most time-honored and least accurate is that of "departmental common knowledge." With this approach, a potential student audience is assessed on the basis of assumptions an instructor and his/her colleagues consistently make about students at "our school." Invariably, this type of assessment starts with the phrases "Our students always..." or "Our students don't like...". Although this is probably the ultimate method for ascertaining the prejudices of a teaching faculty, it is without a doubt the least effective in finding out what students are really like in terms of learning style or cognitive style.

Another approach, undoubtedly more effective, is that of simply asking students how they prefer to learn. This approach has the appeal of simplicity and directness. A simple questionnaire or self-report can be dveloped and administered, and decisions made on the basis of the results. The fundamental problem with this is that in any group there will be some students with a limited range of experience with non-traditional methods. In application, it can be a bit like asking first-graders their views on sex in marriage; their responses will be charming certainly, possibly supportive of your assumptions, and invariably uninformed. When students are directly asked to respond to learning preferences, they may be

uninformed about what is available.

There are other ways, fortunately, to get the needed information. There are a variety of instruments and techniques which can be utilized to determine, at least generally, a student's "cognitive style;" that is, preferred ways of responding to his/her environment, and preferred ways of thinking things through. The assessment of cognitive style is not an exact science; there is still much to be learned about the fundamental processes of the brain, but the techniques which exist have been refined enough to yield a great deal of useful information about student audiences.

One approach to determining cognitive style which is widely used today in higher education is based on the "Hill Educational Sciences Model," a technique called "cognitive style mapping."[5] This approach is generally applicable in education at any level and in any area, but it has particular applications in courses in communication.

The simplest method of applying the "cognitive style mapping" procedure is to have students respond to a variety of statements as pertaining to them "usually," sometimes," or "seldom." Here are a few of the 224 items on a self-assessment instrument which is widely used:

.I prefer to follow spoken directions rather than written ones.

.I would rather take a written English test than an oral English test.

.I can understand a speaker better when I can see him/her talking.

.I worry about decisions because I see so many possible ways to solve the problem.[6]

"Cognitive Style Maps" are prepared from these responses for each student in the class and for the class as a whole. Basically, the "map" places the

student (and the instructor) on 28 different scales which relate to preferred ways of learning and interacting with others.

A sample cognitive style map, in this case one which is computer-generated, is shown in appendix I.[7] It is also possible to have students score their own cognitive mapping instruments in class and graph the results by hand. With either approach, a profile is generated for each student showing him/her ways they prefer to think and to interact in a variety of areas.

There is a scale, for example, the first one on the sample "map," which attempts to measure preference for listening over reading. Students who are relatively high on this scale, compared to the third one which indicates preference for reading over listening, will likely prefer the lecture method and be unhappy with an independent study arrangement where outside readings constitute the core of the course.

Other scales deal with qualities of the learning environment; for example, to what degree a classroom which is too hot or too cold will interfere with learning, to what degree a noisy or unattractive learning environment will interefere with learning, and so on. Some students will tend to "play by the rules" the instructor sets for the class, and others will be less likely to. Some will automatically tend to be empathetic in any interpersonal interaction, and others will not. (This particular measure can be a good indication of how thoroughly a communication educator needs to delve into the area of empathy skills.) There is variation, too, in how important it is for various students for classes to start and stop on time and for classroom activities to be

smoothly "orchestrated."

Some students strongly prefer that the instructor "act like a professor," while for others this is unimportant or even offensive. Some students are very attentive to non-verbal messages, and for them instruction on the complexities of non-verbal communication will be readily grasped. Some students will tend to be highly "persuasive," in the sense that it is important for them to bring others around to their way of thinking. For these students, the necessity for studying persuasive communication will be evident. Students low on this scale are likely to regard instruction in persuasive communication as overtly manipulative and possibly repugnant.

In addition to these factors are "cultural" factors. Students who are predominantly peer-oriented will prefer working in small groups on projects and will prefer working on class assignments with classmates. They will think highly of peer tutoring as well. Students who are more authority-oriented can be counted on to follow the instructor's agenda (if they can figure out what it is), but they will demand that the instructor be knowledgeable in his/her field and come across that way. These students will have a low opinion of peer tutoring and probably of teaching by graduate assistants regardless of their qualifications for the job. Other students are individual-oriented. They will prefer to work on their own on classwork, and will decide for themselves what they want to get from the course. Their general tendency will be to withdraw from classroom interaction or to keep it to a minimum, and getting them to interact freely will require that the instructor arrange circumstances where the trust level is high.

There are some marked advantages of the cognitive mapping procedure over some of the other techniques used in assessing cognitive style. For one thing, the use of perjorative or psycho-pathelogical terminology is consciously avoided. Students completing the assessment are not branded as a "type I" or "type II" students - the instrument is too complex to permit such simple partitioning. Experience with the instrument indicates that the 28 different scales are largely independent of each other, and at least appear to be measuring what they purport to measure. Students generally agree with their placement on at least 26 of the 28 scales, and we have never had students approach us with a reaction of diminished self-esteem to the procedure, a problem we have had with procedures that measure "internal-external locus of control," and "field dependence-independence."[8]

In fact, any one map is as "good" as any other. What is emerging from extensive utilization of the procedure at East Texas State University - Texarkana is a heterogeniety across age groups, class groups, sexes, grade averages, and so on. Definite patterns have emerged for the student body as a whole, but this may be due primarily to the academic "filtering" process. For example, students who are primarily auditory oriented, who would rather hear things than read them, seem to get filtered out. On the other hand, their proportion in the U.S. population may be lower and our proportion of reading-oriented students is to be expected.

At any rate, the use of the cognitive style mapping procedure has been well received by our students and faculty. It's use was notably <u>not</u> mandated or even suggested by the administration, a factor which seems to have helped the program a good deal.

Most importantly, it tells us quickly and with reasonable accuracy what our audience is like, thus streamlining the process of providing and using methods of teaching which are likely to work with our audience.

Naturally, in a diverse group, instruction cannot pragmatically be tailored to each individual's preferred style of learning. However, it is often sufficient to point out to the individuals concerned that the differences exist; that is, to clarify why you have made the methodological choices you have even though they might not be what certain members of the group might have preferred. You may learn, in assessing your particular audience, that you should change nothing about the "traditional" method you have been using in the past.

It is apparent that communication education must be a viable part of a student's education. Communication skills and knowledge is central to any human being's survival in this highly technocratic and complex society. Communication departments can only offer insight and skills which enhance each and every other department's goals. Communication educators in their plight to offer quality education in conjunction with modern and effective teaching methodologies would profit by the utilization of "cognitive mapping" to assess student learning preferences. Communication has the luxury of being diverse in its skills and information base. This diversity allows for a diversity in teaching methodologies. Human communication departments are here to stay because we supply a vital need for all student populations. Let us also be able to grow and keep pace with student preferences in learning as well. Consider what has been discussed and test these ideas out in your own communication classroom environments.

FOOTNOTES

1 The growth and interest in the Speech Communication Association, the International Communication Association and regional associations have all contributed to organizing and legitimizing the field of Speech Communication.

2 R. G. Springhorn, "The utilization of classroom activities as a viable pedagogical approach to inductive learning," The Florida Speech Communication Journal, January, 1974, 2(1), pp. 7-12.

3 For National Trends in Higher Education see, Association of American Colleges, "Trends 2,000: National and Regional Demographic Trends, 1978." For trends in higher education in the state of Texas, see Coordinating Board, "Fall Headcount Enrollment Forecasts-Texas Post Secondary Educational Institutions, 1978-1987, study paper 27," Coordinating Board, Texas College and University System, Austin, Texas, 1978.

4 Ibid., entire document.

5 Hill, Joseph E. "Symbols and their Meaning," Institute for Educational Sciences, Oakland Community College, Michigan.

6 The instrument, developed at Mountain View College in Dallas, Texas, presents a series of 28 items in 8 different forms. The instrument is freely available to persons trained in its use. For further information, contact Jim Corvey or Harryette Erhardt at Mountain View College, 4849 West Illinois Avenue, Dallas, Texas 75502.

7 FORTRAN programs for producing individual and group cognitive style maps are available free of charge from Thomas Valler, Curriculum Design, East Texas State University, P. O. Box 5518, Texarkana, Texas 75501. Other programs have been developed in different formats around the country, but all present essentially the same information. However, access to a computer is not essential for cognitive style mapping procedures.

8 The measures referred to here are the "Rotter Internal-External Locus of Control Scale" and the "Group Embedded Figures Test." These are both valuable instruments in ascertaining specialized aspects of cognitive style, but even a cursory examination of the literature relating to either of them reveals an implicit bias in favor of "Internal Locus of Control" over "External Locus of Control," and for "Field Independence" over "Field Dependence." It is difficult to keep this implicit bias from the attention of students when the results of testing are freely shared with them.

APPENDIX I

COGNITIVE STYLE MAP

THOMAS STUDENT — DATE 12/15/80 — S.S. NUMBER 222-33-4444

CODE	NEGLIGIBLES	MINORS	MAJORS	SCORE	MEANING
T(AL)	●●●●●●●●●●●●●●			14	PREFERENCE FOR SPOKEN WORDS AND DESCRIPTIONS
T(AQ)	●●●●●●●●●●			10	PREFERENCE FOR SPOKEN NUMBERS AND SYMBOLS
T(VL)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	36	PREFERENCE FOR WRITTEN WORDS, AND ILLUSTRATIONS
T(VQ)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●●●	40	PREFERENCE FOR WRITTEN NUMBERS AND SYMBOLS
C(A)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●●	38	AUDITORY: QUALITY OF SOUNDS IMPORTANT IN LEARNING
C(C)	●●●●●●●●●●●●●●	●●●●●		20	OLFACTORY: SENSE OF SMELL IMPORTANT IN LEARNING
C(S)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●●	38	SAVORY: TASTING-DRINKING COFFEE,CHEWING-IMPORTANT IN LEARNING
C(T)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●●●	40	TACTILE: SENSE OF TOUCH, PHYSICAL COMFORT IMPORTANT IN LEARNING
C(V)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●	24	VISUAL: APPEARANCE OF AREA AND MATERIALS IMPORTANT IN LEARNING
C(P)	●●●●●●●●●●●●●●	●●●●●●●●●●		26	PROPRIOCEPTIVE: TEND TO WORK WITH SEVERAL IDEAS AT ONCE
C(CEM)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●	36	EMPATHY: TENDENCY TO RESPOND TO OTHERS WITH EMPATHY
C(CES)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●	32	AESTHETICS: BEAUTY OF THINGS IMPORTANT IN LEARNING
C(CET)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●●	38	ETHIC: TENDENCY TO FOLLOW YOUR PERSONAL RULES
C(B4)	●●●●●●●●●●●●●●	●●●●●●●		22	HISTRIONIC: TENDENCY TO FULFILL ROLE EXPECTATIONS
C(K)	●●●●●●●●●●●●●●	●●●●●●●		22	KINESICS: NON-VERBAL COMMUNICATION IMPORTANT IN LEARNING
C(KM)	●●●●●●●●●●●●●●	●●●		16	KINESTHETICS: USING PROPER FORM, SEEING SELF AS COORDINATED
C(P)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●●●	40	PROXEMICS: PHYSICAL & SOCIAL DISTANCE IMPORTANT IN LEARNING
C(S)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●●	38	SELF-KNOWLEDGE: TENDENCY TO TRUST PERCEPTIONS OF SELF
C(T)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●●●	40	PERSUASIVENESS: BRINGING OTHERS TO YOUR WAY OF THINKING
C(TM)	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●	36	TIME: KEEPING ON SCHEDULE IMPORTANT IN LEARNING
A	●●●●●●●●●●●●			12	ASSOCIATES: PREFERENCE FOR WORKING WITH PEERS IN LEARNING
F	●●●●●●●●●●●●			12	FAMILY: PREFERENCE FOR WORKING WITH AN AUTHORITY IN LEARNING
I	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●●●●●●●●●	40	INDEPENDENT: PREFERENCE FOR WORKING ALONE IN LEARNING
M	●●●●●●●●●●●●●●	●●●		14	PRINCIPLES: APPLYING RULES IN MAKING JUDGEMENTS
D	●●●●●●●●●●●●●●	●●●●●●●●●		24	DISCRIMINATION: SEEING THINGS IN TERMS OF DIFFERENCES
G	●●●●●●●●●●●●●●	●●●●●●●●●		24	GENERALIZATION: SEEING THINGS IN TERMS OF SIMILARITIES
L	●●●●●●●●●●●●●●	●●●●●●●●●●	●●●●	30	APPRAISAL: LOOKING AT THINGS FROM ALL SIDES
(K)	●●●●●●●●●●●●●●	●●●●●		20	DEDUCTION: APPLYING RULES OF LOGIC IN MAKING JUDGEMENTS
	NEGLIGIBLES	MINORS	MAJORS		

APPENDIX II

INTERPRETING YOUR COGNITIVE STYLE MAP

THE COGNITIVE STYLE MAP IS NOT AN ACHIEVEMENT TEST. It indicates nothing about your abilities as a student, or about what you have learned in school. It is concerned only with how you have indicated that you prefer to learn and to interact with others.

If there is anything on your map which seems incorrect to you, go by your judgement and experience rather than by the map.

Each line on your map has a CODE at the left margin. These codes are associated with the theoretical model this cognitive style mapping procedure is based on. Rather than indicating these theoretical terms, your map has a short statement which briefly explains what each line means.

Each line of the map also has a bar-type graph, divided in NEGLIGIBLES, MINORS, and MAJORS.

If you have a MAJOR on a line, your score fell between 27 and 40. This indicates as aspect of your cognitive style which is very important for you, something you will tend to do consistently unless you make a conscious effort to do otherwise.

If you have a MINOR on a line, your score fell between 16 and 26. This indicates an aspect of your cognitive style which you use sometimes, but not consistently.

If you have a NEGLIGIBLE on a line, your score fell between 0 and 15. This indicates an aspect of your cognitive style which you seldom or never use unless you make a conscious effort to do so.

A tie or a near-tie on lines which are obviously related to each other indicates no strong preference one way or the other.

REMEMBER, your map indicates how you prefer to learn and to interact with others, not your capabilities. You can consciously change any aspect of your cognitive style.